



The manufacturer may use the mark:



Revision 1.3 March 25, 2020
Surveillance Audit Due
April 1, 2021



ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat

Zertifikat / 合格証

ROS 1711003 C001

exida hereby confirms that the:

Emerson's Rosemount® 2090 Pressure Transmitter with 4-20mA HART

Device Label SW 1.0.0-1.4.x

Rosemount Inc.

Shakopee, MN - USA

Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 2@HFT=0 SIL 3@HFT=1, Route 1_H

For models where SFF ≥ 90%

SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H

PFDAVG and Architecture Constraints

must be verified for each application

Safety Function:

Emerson's Rosemount 2090 Pressure Transmitter will measure pressure/level within the stated performance specifications when operated within the environmental limits found in the product manual.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



Evaluating Assessor

Certifying Assessor

ROS 1711003 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element
SIL 2@HFT=0 SIL 3@HFT=1, Route 1_H
 For models where SFF ≥ 90%

SIL 2@HFT=0 SIL 3@HFT=1, Route 2_H

PFD_{AVG} and Architecture Constraints must be verified for each application

Emerson's
 Rosemount® 2090
 Pressure Transmitter
 with 4-20mA HART

Systematic Capability:

The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT¹

Route 1_H Table

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
Rosemount® 2090	-	94	279	41	90%

Route 2_H Table²

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Rosemount® 2090	-	94	279	41

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{avg} considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: ROS 17/11-003 R001 V1 R1

Safety Manual: 00809-0200-4108

¹ FIT = 1 failure / 10⁹ hours

² SFF not required for devices certified using Route 2_H data. For information detailing the Route 2_H approach as defined by IEC 61508-2, see Technical Document entitled "Route 2_H SIL Verification for Rosemount Type B Transmitters with Type A Components".



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